between *M. guttatus, M. tilingii,* and *M. glabratus,* are probably due to gene or cryptic structural differences rather than to differences in chromosome number. However, the latter reason appears to be the cause of the complete genetic barrier between these species and *M. luteus.* Work is in progress to obtain additional chromosome counts of the races and species of *Mimulus* in order to further our understanding of the nature of the many genetic barriers of various degrees known to be present in the genus.

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NOTES ON NEVADA MIMULUS

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In the course of preparing the Scrophulariaceae for "Contributions Toward a Flora of Nevada," a few situations in *Mimulus* have come to my attention that require clarification.

Mimulus bigelovii Gray

Mimulus bigelovii Gray var. ovatus Gray, Syn. Flora No. Am. ed. 2, Vol. 2, Pt. 1: Suppl. 445. 1886. *Eunanus cusickii* Greene, Pittonia 1:36. 1887; *Mimulus cusickii* (Greene) Piper, Contr. U. S. Nat. Herb. 11:508. 1906; *Mimulus bigelovii* var. *cuspidatus* Grant, Ann. Mo. Bot. Gard. 11:279–280. 1924.

Grant (1924, pp. 281–282) maintained *Mimulus cusickii* (Greene) Piper and included in it, as a synonym, *M. bigelovii* var. *ovatus* Gray in its entirety. She also presented the new variety *M. bigelovii* var. *cuspidatus.* Study of the type specimens of *M. bigelovii* and *M. bigelovii* var. *cuspidatus* and of the specimens upon which the descriptions of *M. bigelovii* var. *ovatus* and *M. cusickii* were presumably based as well as study of general collections (mostly from Nevada) indicate that Greene's and Grant's entities can be considered conspecific with *M. bigelovii* var. *ovatus* and their proposed names treated as synonyms.

Piper (1906, p. 508) merely stated that *M. bigelovii* Gray var. *ovatus* Gray was "sufficiently different" (from *M. bigelovii* Gray), and he made it a separate species, *M. cusickii* (Greene) Piper, based on *Eunanus cusickii* Greene. Piper cited only one collection, *Brandegee 1011*. Greene had pointed out that his *Eunanus cusickii* has broadly ovate, very acute leaves, does not have "the pubescence" (of *M. bigelovii* Gray), and is otherwise different. However, he included *M. bigelovii* var. *ovatus* Gray as a synonym, at least in part. Grant amplified the description of *M. cusickii* (Greene) Piper as follows: longer and stouter stems, closely sessile leaves and differences in the calyx throat and in the exsertion and pubescence of the style. Gray in his original description of var. *ovatus* had considered it "more rigid," taller, with closely sessile leaves having apiculate-acuminate tips.

Greene did not designate any type for *Eunanus cusickii,* but cited the collections of Cusick and Howell in Washington and Oregon. Gray likewise had established no type for his var. *ovatus,* citing Torrey's Nevada collection and those of Nevius, Hall, and Howell, "northward to the Columbia River." Pennell, in a pencilled note on the sheet containing Torrey's collection, considered Nevius' collection to be the type of var. *ovatus*. Grant designated Torrey's collection as lectotype of var. *ovatus,* and annotated the sheet containing Nevius' and Howell's collections as *M. cusickii* (Greene) Piper. Since neither Gray nor Greene established definite types for *M. bigelovii* var. *ovatus* and *Eunanus cusickii* respectively, interpretation of the names must be based upon the material cited in the original descriptions. Along with these, subsequent collections are valuable checks and aids.

The sheets containing the originally cited collections of Torrey, Howell, and Nevius (Gray Herbarium) clearly show that *M. bigelovii* var. *ovatus* Gray and *Eunanus cusickii* Greene are morphologically identical. Although these three collections differ in stature from each other, they are not in general very much taller than the typical *M. bigelovii*. The leaves on these collections vary gradually from narrow, one-nerved, non-apiculate, non-cuspidate-tipped, with tapering narrowly sessile base, as in the typical *M. bigelovii,* to broad (ovate), 3–5 nerved, cuspidate-tipped, with little-tapering, broadly sessile base, as in var. *ovatus (Eunanus cusickii)*. Thus the broad leaf with closely sessile base is found in varying degrees on the collections of Torrey, Howell, and Nevius, and this is also true of the cuspidate tip.

The variations in the calyx orifice, fruit size, style exsertions, and pubescence of these three collections are minimal and within the limits of the typical *M. bigelovii*. The pubescence does not vary discernibly from one to the other, and is only slightly different from that of *M. bigelovii*.

Grant's type specimen of *M. bigelovii* var. *cuspidatus* has pedicels up to 8 mm. long (but mostly 3–6 mm.). The pedicels of var. *ovatus* are shorter. However, some collections of *M. bigelovii* Gray show pedicels approaching the length of those in the type specimen of var. *cuspidatus*.

In all other respects *M. bigelovii* var. *cuspidatus* Grant is the same as *M. bigelovii* var. *ovatus* Gray. In my judgment the pedicel length alone is insufficient to maintain var. *cuspidatus* separate from var. *ovatus*.

Mimulus eastwoodiae Rydb.

In her monograph, Grant divided *Mimulus* into two clearly defined sub-genera and split these into several sections. Among the sections in the subgenus *Synplacus* Grant are *Erythranthe* Greene and *Paradanthus* Grant. These are separated from each other primarily on the length of the calyx teeth, those of *Erythranthe* being 4–6 mm. long while those of *Paradanthus* do not exceed 3 mm. in length. Secondary characters dividing the two are exserted stamens and uninflated calyces at maturity in *Erythranthe,* as opposed to included stamens and occasionally inflated calyces in *Paradanthus*.

Mimulus eastwoodiae Rydb. (Bull. Torrey Club 40: 483. 1913) was placed in *Paradanthus* by Grant. Examination of three sheets of the type collection of this species clearly shows calyx teeth 4–6 (8) mm. long, exserted stamens and uninflated calyx at maturity.

Therefore, it appears that *M. eastwoodiae* Rydb., based on the characters cited, belongs in *Erythranthe* rather than *Paradanthus*.

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NOTES AND NEWS

Monochoria vaginalis in California. While visiting the Biggs Rice Station (California Cooperative Rice Research Foundation), Butte County, in August 1954, Mr. William A. Harvey, Extension Specialist in Weed Control, noted an unfamiliar weed in several of the experimental plots. It was not in flower at the time, and the specimens which he collected could not be identified. In September, however, flowering specimens were obtained. We observed that in most cases the inflorescences did not project above the surface, the flowers actually opening under water. Cleistogamous pollination was clearly indicated in several buds that we dissected.

We identified our specimens (*Harvey, McCaskill,* & *Tucker 2753*) at the University of California Herbarium, Berkeley, as *Monochoria vaginalis* (Burm. f.) Presl. No New World collections were present, but ours proved a good match for specimens from Oahu, Formosa, and Kwangtung Province, China. This species is evidently widespread in India and southeast Asia, and is reported as a frequent inhabitant of rice paddies.

Its occurrence in Butte County is probably very limited as yet, the only colonies noted being north of the Rice Station or in its immediate vicinity. Although perhaps only a waif as yet, it seems to compete well with other water weeds, and with rice where the stands are thin. It is considered worth reporting here, therefore, since it is evidently new to the United States, if not, indeed to North America.—J. M. Tucker and B. J. McCaskill, Department of Botany, University of California, Davis.